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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/044,076	01/11/2002	H. Ufuk Alpaya	064441.0223	6503
31625	7590	11/06/2003	EXAMINER	
BAKER BOTTS L.L.P. PATENT DEPARTMENT 98 SAN JACINTO BLVD., SUITE 1500 AUSTIN, TX 78701-4039			MOHAMEDULLA, SALEHA R	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 11/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/044,076	ALPAY ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Saleha R. Mohamedulla	1756	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>2</u> | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

Claims 1-22 are pending.

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 7, 10-16 and 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by US# 6,261,725 to Tzu et al.

Tzu teaches a photomask and a method of making the mask. Tzu teaches that phase shift photomasks for use with deep ultraviolet (DUV) exposure radiation are generally formed employing quartz substrates with high DUV transmittance for the clear areas and a phase shift DUV absorbing patterned layer formed of an etchable translucent material such as a spin-on-glass (SOG) dielectric material, for example (col. 2, lines 15-25). Tzu teaches in Figure 4 a mask with a quartz substrate with an engraved pattern 12. The mask includes a phase shift layer 14 (col. 2, lines 60-67). The phase shift layer can be silicon dioxide (col. 5, lines 20-30). The phase shift layer is formed using an aqueous suspension therefore, the layer is made by chemical vapor deposition. After the phase shift layer is formed, Tzu teaches a gas phase subtractive etching method. Therefore, Tzu teaches forming a photomask pattern on a substrate and forming a transparent protective coating on the pattern made of spin-on-glass. Spin-on-

glass inherently has an electrical resistivity of at least 10 ohm meters. Because Tzu teaches that spin-on-glass pattern is an absorbing material, Tzu teaches forming an absorber layer and removing portions of the absorber from the substrate. Tzu also teaches that the substrate is etched, therefore, Tzu teaches removing material from the substrate to form trenches in the substrate. Tzu also teaches that the spin-on-glass is translucent, therefore, the pattern is opaque. Because Tzu shows in the figures that the pattern layer is flat, the pattern layer is planarized. Tzu also teaches that the pattern of transparent portions of an exposure mask is transferred to a photoresist covered wafer and the photoresist is subsequently developed. The pattern is transferred using light exposure (col. 1, lines 25-35). Therefore, Tzu teaches claim 21 limitations.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US# 6,261,725 to Tzu et al.

Tzu teaches the limitations of claim 1 discussed above. Tzu does not specifically teach curing the material. Tzu does teach that the phase shift layer is formed using an aqueous suspension (col. 5, lines 20-30). It is obvious that the suspension is dried to form a hardened

silicon dioxide layer that functions as a mask layer. Therefore, it would be obvious to one of ordinary skill in the art to cure the material as Tzu teaches depositing the material in aqueous form and that the material forms a hardened mask layer.

5. Claims 8, 9, 17, 18 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US# 6,261,725 to Tzu et al. in view of US# 6,544,693 to Levinson et al.

Tzu teaches the limitations of claims 1, 12, and 21 discussed above. Tzu does not teach an antireflective layer and a pellicle. Levinson teaches a pellicle that is attached to a mask or reticle. The pellicle is generally comprised of a pellicle frame and a membrane. The pellicle frame may be comprised of one or more walls, which is securely attached to a chrome side of the mask or reticle. Pellicles have also been employed with antireflective coatings on the membrane material.

The references are analogous art as they are drawn to exposure masks. It would have been obvious to one of ordinary skill in the art to use the pellicle coating of Levinson in the mask of Tzu in order to reduce the likelihood that particles might migrate into an exposure area of the mask (col. 1, lines 50-55).

### ***Conclusion***

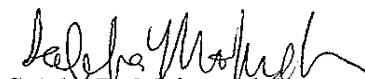
6. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Saleha Mohamedulla whose telephone number is (703) 308-1260. The Examiner can normally be reached Monday-Friday, from 8:00 AM to 4:30 PM. If

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attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Mark Huff, can be reached on (703) 308-2464. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9310. The After Final fax phone number is (703) 872-9311. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



Saleha R. Mohamedulla  
Patent Examiner  
Technology Center 1700  
October 29, 2003